Washington Park Arboretum

BULLETIN

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Summer 2018

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Washington Park Arboretum

The Arboretum is a 230-acre dynamic garden of trees and shrubs, displaying internationally renowned collections of oaks, conifers, camellias, Japanese and other maples, magnolias, hollies and a profusion of woody plants from the Pacific Northwest and around the world. Aesthetic enjoyment gracefully co-exists with science in this spectacular urban green space on the shores of Lake Washington. Visitors come to learn, explore, relax or reflect in Seattle's largest public garden.

The Washington Park Arboretum is managed cooperatively by the University of Washington Botanic Gardens and Seattle Parks and Recreation; the Arboretum Foundation is its major support organization.

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The Arboretum Foundation's mission is to create and strengthen an engaged community of donors, volunteers and advocates who will promote, protect and enhance the Washington Park Arboretum for current and future generations.

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ABOVE: A yellow jacket visiting a manuka (*Leptospermum scoparium*) flowering in the New Zealand Forest. (Photo by Niall Dunne)

ON THE COVER: Western sweetshrub (*Calycanthus occidentalis*), a native of California, blooming to the south of the upper pond in the Woodland Garden, close to Arboretum Drive. (Photo by Niall Dunne)

a tale of THREE GIFTS

One of the gratifying parts about our work at the Arboretum Foundation is seeing how donor gifts impact the park we all enjoy. I'd like to share the story of three of these gifts with you. First, I had a chance last month to tour the New Zealand Forest with several members of the Arboretum hort team and a donor who has been a steadfast supporter of the eco-geographic garden from its inception. It was fascinating to hear them talk about the initial vision and see how it has wonderfully unfolded. After all, one of the beauties of a garden is how it grows and changes, and gifts that enable careful stewardship are a key part of the equation.

Another gift was made in honor of a key volunteer at the Seattle Japanese Garden and it involved a new roof for the *machiai*, which is the small structure where guests begin their experience for a tea ceremony. This painstakingly crafted project features lovely wood rafters and copper shingles, and the finished roof helps create just the right environment to sit and contemplate the garden and the tea experience to come. We will honor this volunteer and her family at the Garden Party on July 12. I hope you will join us for this popular event, and enjoy sushi, sake, jazz and a summer evening in one of the region's most resplendent gardens.

The third gift is from a longtime friend of the Arboretum and will allow significant clean up and enhancement of the collections and natural areas along Lake Washington Boulevard over the next 18 months. Crews have already started removing invasive plants from the newly established wetlands adjacent to the Loop Trail and Boulevard, and youth crews from the Student Conservation Association will be joining in restoration efforts along Arboretum Creek. We are very excited about all the ways this area will be transformed. In real estate terms, the project will seriously upgrade the "curb appeal" of Lake Washington Boulevard for the many folks who traverse it each day, and give them a glimpse of the types of treasures found throughout the park.

Thanks to these special donors, and to each of you who impacts the Arboretum through your ongoing support.

Jane Stonecipher
Interim Director, Arboretum Foundation

The *machiai* in the Japanese Garden, with its newly renovated roof. (Photo courtesy David Rosen)

ELEMENTS OF DESIGN

COLOR

Some Encouraging Words for Gardeners

TEXT AND PHOTOS BY
DANIEL MOUNT

Color is the first thing visitors take in when they enter your garden—and your use of color says a lot about you. Are you playful? Sophisticated? Chaotic? Reticent? Our responses to color are visceral and complicated, merging at the crossroads of primitive desire (the search for ripe fruit) and modern fashion (What should I wear to that party tonight?).

The challenge is not so much how to get more color into your garden, as how to choose colors in the first place. We live in one of the most colorful periods in history. Just walk down the cereal aisle at any grocery store, riffle through the summer dress rack at any department store, or troll down the annual tables at any nursery come spring, and you can see what we are up against.

I tend not to be a rule maker when I teach color classes to gardeners. I try to encourage participants to experience color first hand. Science tells us that we each have a unique and personal appreciation of color. Think of the married couple standing in front of paint swatches at the hardware store: Never have they felt farther apart!

Still, there are some very basic responses to color we all share. Warm colors—reds, yellows, oranges—seem to advance; cool colors—blues, greens, violets—seem to recede, for example. Warm colors excite, whereas cool colors calm.

Whether you intend your garden to be a place for serene relaxation or fun parties—or both—your use of color will be important in achieving your goal. For beginner gardeners, mixing and matching colors can be intimidating, so it's good to familiarize yourself with some of the design fundamentals. (See the sidebar for a list of my favorite books on color.)

Books can teach you about the primary colors (red, blue, yellow), secondary colors (orange, green, purple), and their intermediate tertiary colors (including violet, vermilion and chartreuse). And they can show you how to blend the colors using a simple color wheel.

An easy place to start is mixing "analogous" colors, such as orange and red or green and yellow, which sit beside each other on the wheel. If you feel a little more daring and want to make a plant pop out, you can mix "complementary" colors, such as red and green and purple and yellow, which sit opposite each other on the wheel. "Triadic" schemes attempt to harmonize three colors that are evenly spaced around the wheel, such as purple, green and orange.

A wheel can be a very helpful tool, because today's garden centers are filled with flowers that exhibit the more complex tertiary colors, which can make color blending a challenge to master. Another challenge to adding and mixing color in the garden is working with the dynamics of light. Because the sun's position in the sky changes throughout the day and year, garden light is always in flux. I usually walk around my garden in the evening, after most of the light of day is spent. All the yellow and white flowers begin to glow, picking up subtle shades from the setting sun. In contrast, a sunny, noontime walk would have me avoiding those same flowers because they glare among the darkness of the greens.

We are all working with green, and we can think of this as a limitation or embrace it. A friend of mine embraced it wholeheartedly, creating a nearly monochromatic green garden. He apologized for the lack of color on my last visit. "There is plenty of color here," I told him approvingly. I found it seductive. What flowers did offer color on that February day—a red salvia still in bloom, a few pinkish hellebores—became singular experiences to be savored.

I sometimes believe I have used too much color in the gardens I have designed. This may have come from years of creating eye-catching "end caps" at the nurseries where I worked. Garden designers often recommend limiting one's palette, such as by creating simple, analogous color schemes. I, too, am coming around more and more to a restrained, less-is-more attitude toward color. This is because a good garden is made firstly from solid form and structure, and secondly by interesting texture.

That does leave color last, but I wouldn't say necessarily least!

Some of Daniel's Favorite Books on Color

"Colorist: A Practical Handbook for Personal and Professional Use," by Shigenobu Kobayashi (Kodansha USA, 1999). [Though this is not a garden color book per se, the author uses many examples from gardens.]

"The Gardener's Palette," by Sydney Eddison (McGraw Hill, 2002). [Eddison also developed a portable gardener's color wheel, available in stores.]

"The Pantone Book of Color," Leatrice Eiseman and Lawrence Herbert (Harry N. Abrams, Inc., 1990).

"Malcolm Hillier's Color Garden," by Malcolm Hillier (Dorling Kindersley, 1995).

"Color in Your Garden," by Penelope Hobhouse (Frances Lincoln, 2003).

"Color by Design: Planting the Contemporary Garden," by Nori and Sandra Pope (Soma Books, 1998).

Daniel Mount is an estate gardener, garden writer, and member of the "Bulletin" Editorial Board. He lives on a small farm in the Snoqualmie Valley. Read more of his reflections on plants and gardening at www.mountgardens.com.

PHOTO CAPTIONS

1. Page 3: An excited serenity is approached in this seemingly monochromatic combination. The subtle, peachy-orange nears yellow, while the yellows near green, showing the quiet harmony of using analogous colors.

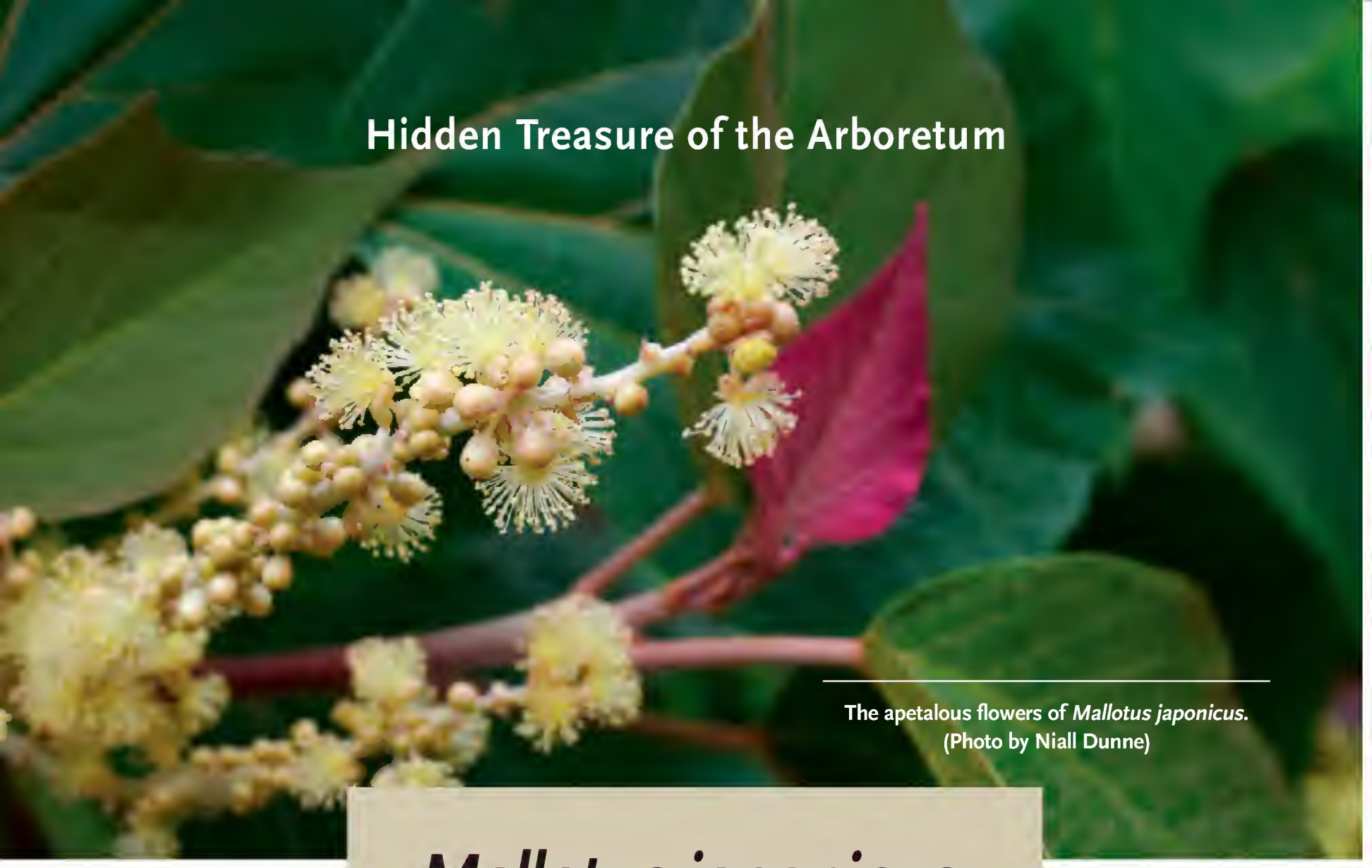
2. Opposite left: Plant color is very complex, as can be seen in this complimentary combination of purples and yellows. Strong and interesting, but not serene.

3. Opposite right: This combo is a strong warm/cool triad. The yellow foliage acts as a bridge between the charged reds and greens.

4. Above, upper left: This photo shows how warm colors (red) advance, while cool colors (blue) recede. Green, a combination of a cool and warm color, becomes a neutral middle ground. Gardeners are always working off of a green middle ground.

5. Above right: In this combo, two strongly contrasting greens, the blue-green of the hosta and the yellow-green of the sweet flag, create a very dynamic picture—though the shared green component also creates harmony.

6. Above, lower left: The ratio of warm colors to cool colors is near perfect in this analogous color scheme featuring red, orange and yellow over a sea of varying greens. Warm colors should always be used sparingly.



The apetalous flowers of *Mallotus japonicus*. (Photo by Niall Dunne)

Mallotus japonicus
Food-Wrapper Plant

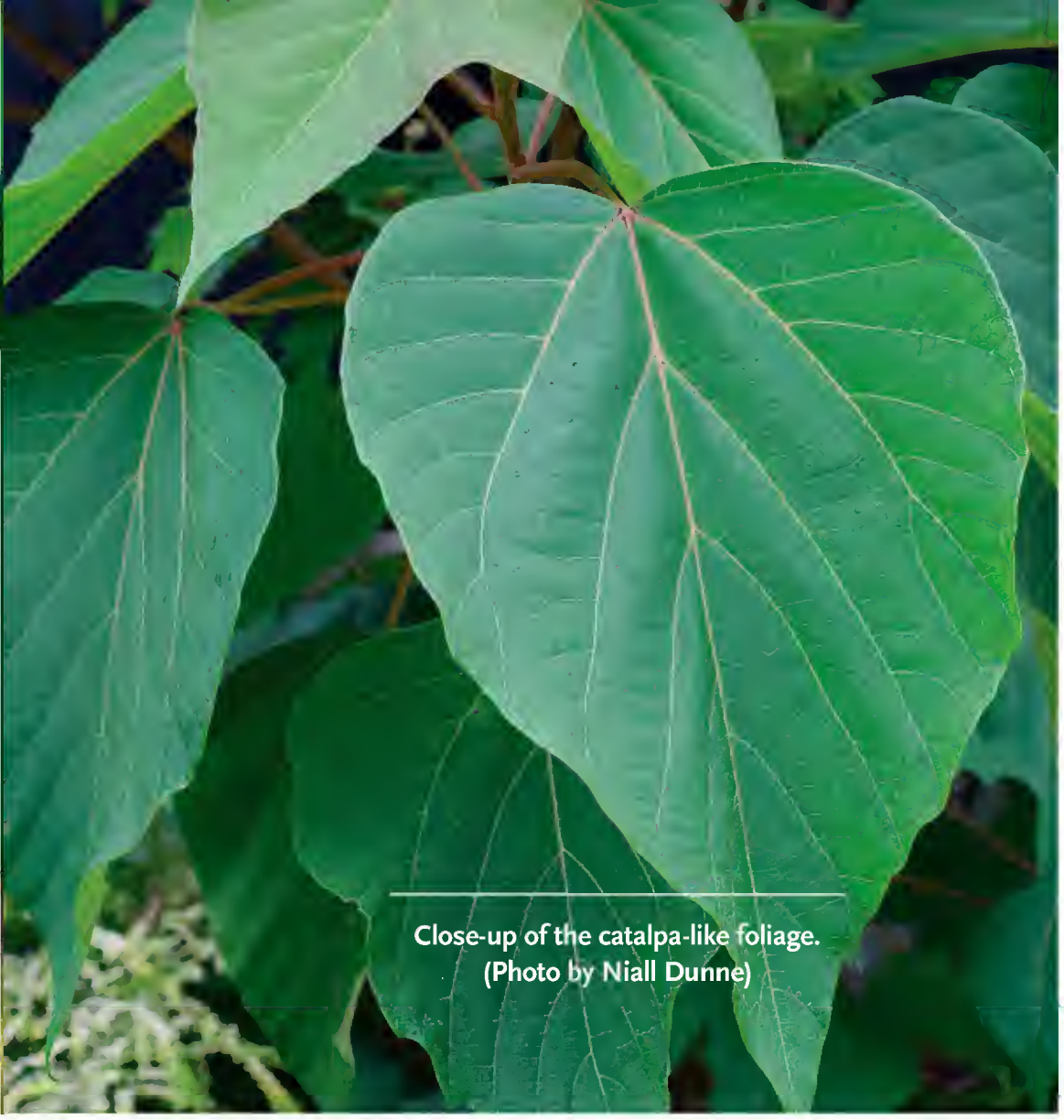
By Walt Bubelis

I have often admired the two large-foliaged plants that grow on the south side of the Big Greenhouse, near to the Graham Visitors Center, and taken pictures of their blooms. They are specimens of *Mallotus japonicus*, a deciduous shrub native to valleys and forest margins of China, Taiwan, Korea and Japan. Though its foliage looks like that of a catalpa, the plant is actually a member of the spurge family or Euphorbiaceae, and so is closely related to poinsettias, euphorbias, castor oil plant and crotons. Indeed, the species was originally named *Croton japonicus*, by none other than Linnaeus himself.

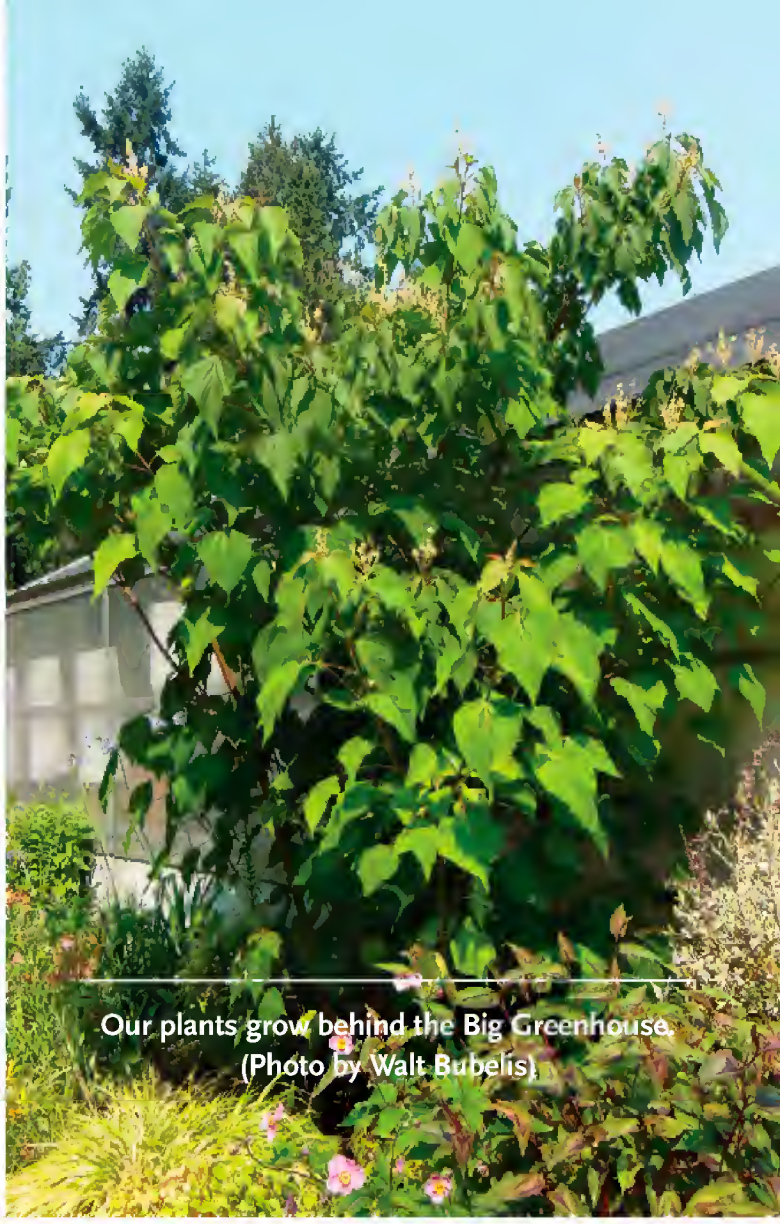
Mallotus is a wide-ranging genus, consisting of well over 100 species native from tropical Africa to islands in the western Pacific. The genus name translates to "woolly," a reference to the hairy leaves and shoots found on some of the species.

Mallotus japonicus can get up to 12 feet tall or more, and both our specimens are in that ballpark. In Japan, it is known as the food-wrapper plant or *akamegashiwa*, because—as you may have surmised—the large, oval leaves (which get up to 10 inches long and six inches wide) were used to wrap food. The young leaves are also edible when boiled, and the bark of the plant has been used to treat various gastric problems. Recent research has found that an extract from the leaf may be useful in protecting human skin from disorders related to melanin accumulation.

Interestingly, the leaves have small, translucent dots, which contain toxic metabolic substances that protect the plant against herbivores. A second line of defense is provided by the presence of extrafloral nectaries and food bodies on leaf and stem surfaces. These attract



Close-up of the catalpa-like foliage. (Photo by Niall Dunne)



Our plants grow behind the Big Greenhouse. (Photo by Walt Bubelis)

ants, which keep hungry herbivores at bay. Rewarding herbivore-battling ants with sugar from foliage-based nectaries is an adaptation found in many other plants, including cherries and deciduous viburnums.

Any gardener seeking a not overly large, tropical-looking plant should consider *Mallotus*. The plant is hardy from USDA Zone 8 to 10 (Seattle is in Zone 8) and easily grown in average, well-drained soils in full sun to part shade. The emergent spring foliage is an attractive red color, and the creamy-white, apetalous flower panicles in late spring and early summer are showy and fragrant. Female plants (the species is dioecious) will reward you in late summer with capsule fruits bearing orange seeds.

To acquire the plant, you may need to start small, with cuttings or seeds. (The Pat Calvert Greenhouse at the Arboretum often sells young plants propagated from cuttings and suckers, and Chiltern Seeds of England offers seeds.) But you shouldn't have to wait long to enjoy the flowers!

The Arboretum's specimens came from seed collected in the wild by one of the foremost nurserymen of his time: J.C. Raulston, of North Carolina State University. He collected it in the Cholla-Namdo province of South Korea in 1985. This area is the warmest region in South Korea, with very hot and humid summers, but it is also subject to long, cold and dry winters. Our plants are in a gravelly bed and get reflected heat from the greenhouse, which likely contributes to their success here.

Other *Mallotus* specimens have been grown in the Arboretum over the years but have succumbed to natural causes. If the Arboretum's plans for a new education center (at the site of the Big Greenhouse) come to fruition, the *Mallotus* and other collection plants in this area will be transplanted elsewhere in the park. In the meantime, stop by the sunny border at the back of the greenhouse for a botanical treat.

Walt Bubelis is a professor emeritus in the Horticulture Department at Edmonds Community College. He is also a member of the "Bulletin."

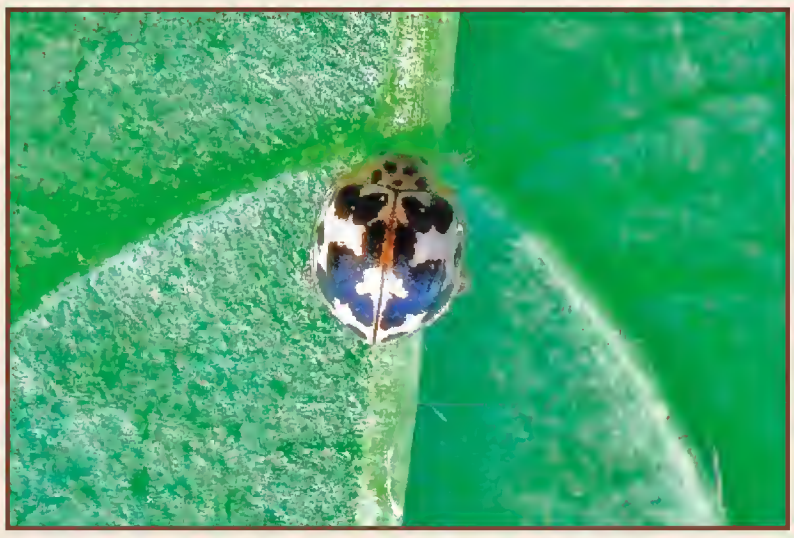
Insects of the Arboretum

By Patrick C. Tobin

Let's face it. When most of us think of insects, we think of pests. In fact, the very definition of "pest" from the Webster's dictionary includes the word "insect." But out of the more than one million described species of insects, only about one thousand—one tenth of one percent—are considered to be serious pests, and only ten thousand, or one percent, are considered to be even occasional pests. So what exactly are the rest of these insect species doing if they are not damaging our crops or sucking our blood?

It turns out that in addition to not being pests, they are also engaged in extremely beneficial activities. We are fortunate that many beneficial insects make their home in our region, where they perform important services such as pollination, pest control, and the breakdown of organic matter. Following are profiles of some of the beneficial insects and other invertebrates found in Washington Park Arboretum during recent "bioblitzes" (biological surveying events) coordinated by the University of Washington. There's a good chance you might encounter some of them in your own backyard, too.

Giant western crane fly.
(Photo courtesy Jim Moore)



Western fairy lady beetle.
(Photo courtesy Andrew McKorney)

GIANT WESTERN CRANE FLY
HOLORUSIA HESPERA

The giant western crane fly, *Holorusia hespera*, might look like an enormous mosquito—but, thankfully, this native species has no interest in drinking human blood. In fact, crane flies, though closely related to mosquitoes, generally do not eat as adults. They do all their eating during their larval stage and spend most of their adult life (about two weeks long) looking for a mate. And what do the larvae eat? The grayish-brown grubs are primarily associated with rivers and streams, where they consume leaf and other plant debris. (Although the larvae of a few cranefly species feed on the roots of turf grass and are considered pests.)

With a wing span of about three inches and a body length of an inch and a half—not including the legs!—*Holorusia hespera* is the largest crane fly in North America. Crane flies belong to a unique insect order called Diptera, a name that translates to "two wings." Insects in this order—including house flies—are the only insects with one pair of wings, whereas all other insects have two pairs of wings, or are wingless (such as fleas). Where did this other pair of wings go? Well, the back pair of wings evolved into specialized club-like structures called halteres. The

structures (which are easy to see on *Holorusia hespera* because it's so big) move like a gyroscope and help to stabilize the flies when in flight. Crane flies are clumsy fliers as it is; without their halteres, they'd be truly ungraceful in flight!

WESTERN FAIRY LADY BEETLE *PSYLLOBORA BOREALIS*

The western fairy lady beetle is native throughout western North America, including the Puget Sound region and the Arboretum. It belongs to the same insect family (Coccinellidae) as ladybugs, which we often associate with eating aphids and occasionally trying to spend the winter in the comfort of our homes. The western fairy lady beetle, however, likes to spend its winters outside in small groups in leaf litter. As for its dining habits, it belongs to a lady beetle group that does not eat aphids but rather prefers to feed on fungi, especially fungi growing on plants. Thanks to our region's long, rainy, overcast season—lasting from fall to spring—there is no shortage of fungal plant pathogens here! One such group of fungi are the powdery mildews, which are often the bane of gardeners and commercial farmers. Some entomologists have proposed using the western fairy beetle as a natural control for powdery mildews; so, these insects are undoubtedly beneficial, and we should welcome them in our landscapes.

Beetles as a group are the most numerically dominant organisms on Earth: Nearly one out of four of all species—whether animal, plant, bacteria or otherwise—is thought to be a beetle. They owe some of their success to their wings. Beetles, like most insects, have two pairs of wings. However, beetles only use one pair (their hind wings) for flying. The other pair (the forewings) are as hard as the rest of their outer body parts. The role of the forewings is to protect the more fragile, membranous hind wings. This extra layer of protection serves the beetles well, as without their wings and the ability to fly, insects can easily become prey or fail to find their next food source.

YELLOW-SPOTTED MILLIPEDE *HARPAPHE HAYDENIANA*

Although not an insect (which typically has just three pairs of jointed legs), the yellow-spotted millipede, *Harpaphe haydeniana*, plays an important role in the Arboretum. Unlike centipedes, which are largely predators, millipedes are detritivores (organisms that feed on dead organic matter, such as fallen leaves or dead plants). Thus, they serve a critical role in breaking down organic matter. The world would be a much different place—and likely covered in dead animals and plants—if not for detritivores! The breakdown of organic matter also releases back into the soil vital nutrients that living plants need for growth.

Contrary to their name, millipedes do not have a thousand legs. In fact, the number of legs on a millipede ranges from 40 to 400, depending on the species. Millipedes differ from their centipede relatives by the number of legs per

Yellow-spotted millipede. (Photo by Walter Siegmund/ Wikimedia Commons)

Hover fly. (Photo by Joaquim Alves Gaspar/ Wikimedia Commons)

segment: Centipedes have two legs per segment, while millipedes have four legs per segment. The yellow-spotted millipede, which is native to the Pacific Northwest, has 60 legs if male and 62 if female. Not quite a thousand, but certainly enough to get it where it wants to go! It has few predators due to its ability to secrete hydrogen cyanide when threatened (another common name is cyanide millipede). The amount secreted is not enough to seriously harm a human (although it may stain the skin or cause some blistering), but it can be lethal to birds and rodents.

HOVER FLIES, FAMILY SYRPHIDAE

Hover flies from the insect family Syrphidae might cause alarm at first glance. This is because many are mimics of bees and wasps. The bright colors of many species of bees and wasps serve as a warning to potential predators: "Come near me, and I'll sting you!" (The bright markings on the yellow-spotted millipede flash a similar warning.) However, some species mimic these colors even when they lack such formidable defense. Hover flies, also known as flower flies or syrphid flies, are such mimics and are closely related to the common house fly. Many hover flies look like bees and wasps, but rest assured, they lack any type of stinger. Hover flies, like the giant western crane fly, are in the order Diptera and thus also have two wings, with a pair of halteres, and this feature can be used to distinguish them from four-winged bees and wasps.

These insects are extremely beneficial in the Arboretum and beyond. As the common name "flower fly" implies, they generally feed on nectar and pollen from flowering plants, and consequently are extremely important as pollinators. Recent estimates suggest that up to 87 percent of the world's flowering plants depend on animals, and especially insects, for pollination services. Without these hover flies in the Arboretum, there might be a lot less fruit on the trees for resident birds and other wildlife to feed on!

SNAIL-EATING GROUND BEETLE *SCAPHINOTUS* SPECIES

Ground beetles are a very large and globally distributed insect family, and species in this family can be predators, herbivores, detritivores and omnivores. Beetles in the genus *Scaphinotus* are snail eaters, and there are 55 species of them native to North America, including several in our region. As their common name implies, they eat land-dwelling snails. But snails are not always such easy prey as they can retract themselves into their hardened shells. What's a beetle to do to get a meal?!

Well, *Scaphinotus* beetles have overcome this challenge through a modified body shape and mouth. The body of these beetles is curved, much like the curvature in the snail shell. In addition, the mouth is quite elongated and shaped much like a snail fork that you might use while dining on escargots. The adaption allows this group of

Snail-eating ground beetle. (Photo by Walter Siegmund/ Wikimedia Commons)

Common pillbug. (Photo by Walter Siegmund/ Wikimedia Commons)

beetles to consume the otherwise protected snail and is a great example of how insects can evolve to survive on a highly specialized diet. It's also a great example of how having a diverse suite of insects in your garden can help keep pest populations under control!

COMMON PILLBUG
ARMADILLIDIUM VULGARE

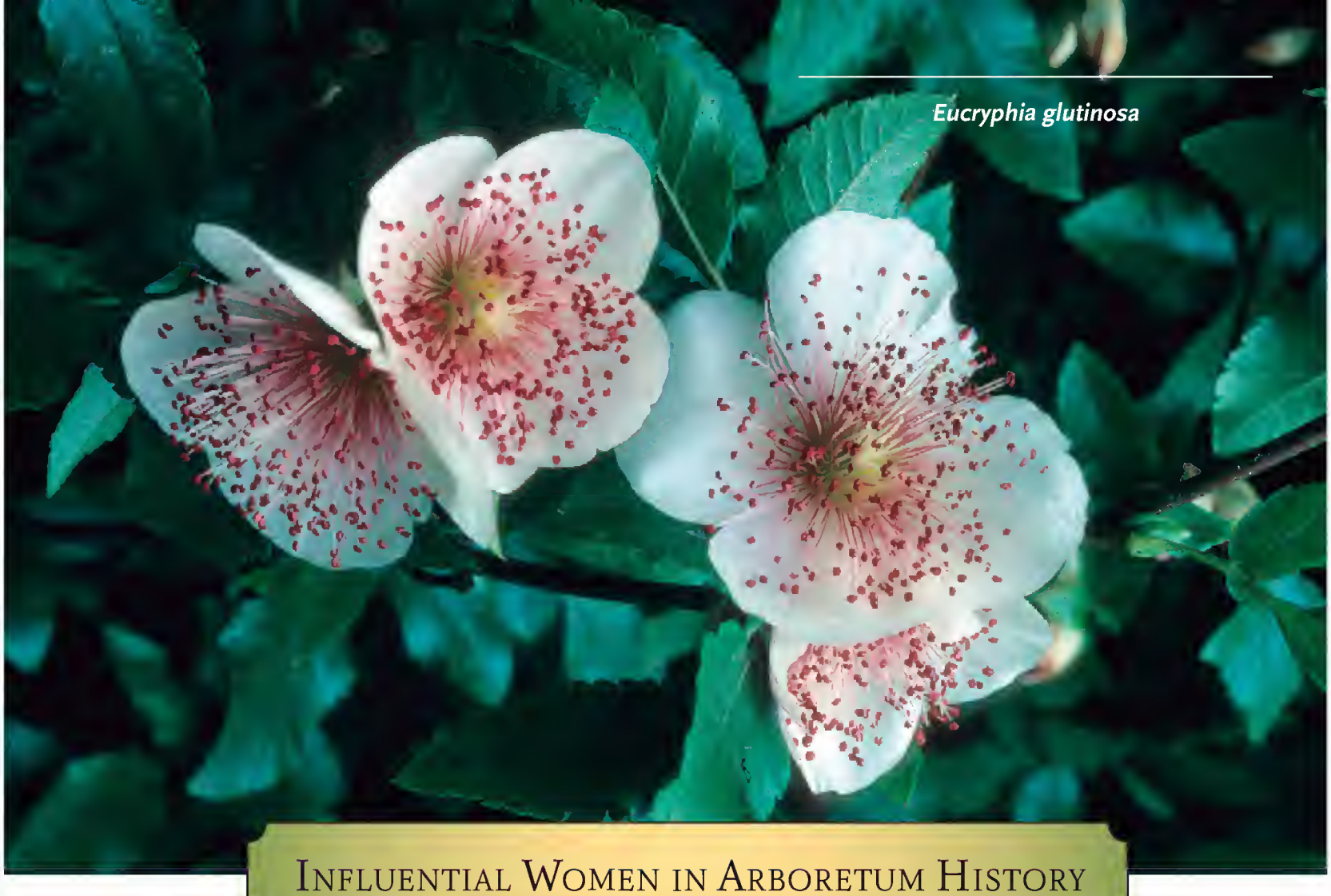
The common pill bug, *Armadillidium vulgare*, belongs to a group called the woodlice, which include pill bugs and sow bugs. (Unlike sow bugs, pill bugs can roll up in a ball as a defense mechanism, and are also called roly-polies.) Despite the presence of "bug" in some of their common names, pill bugs and other woodlice are not insects but rather crustaceans, like lobsters and crabs. In fact, they are the only land-dwelling crustacean.

Pill bugs are important decomposers because they primarily feed on dead plant matter, and thus serve an important role in cycling nutrients back into the soil. Occasionally, pill bugs will feed on lichen and algae, too. This particular species, *Armadillidium vulgare*, is not native to our Pacific Northwest ecosystems but rather is a European species, likely introduced during colonial times. The common pill bug is found on all continents except for Antarctica. They particularly thrive in moist climates and damp soils, making our region an ideal habitat. It is not known whether this non-native species is invasive—in terms of displacing native species—but we do know that it is present throughout the United States in fairly large numbers.

Patrick Tobin is an insect ecologist and associate professor in the School of Environmental and Forest Sciences at the University of Washington. Among his research interests, he studies invasive species, plant-insect interactions and the role of climate change on insect seasonality and distributional ranges. He has helped identify insects and other invertebrates during bioblitzes at Washington Park Arboretum.

Planned gifts play a critical role in sustaining the Arboretum. You have the power to create a lasting legacy here by making a planned gift to the Arboretum Foundation. Planned gifts range from simple bequests in a will, to beneficiary designations in an IRA.

To learn more, contact our Development Director, Lee Benner, at 206-325-4510 or lbenner@arboretumfoundation.org.



Eucryphia glutinosa

INFLUENTIAL WOMEN IN ARBORETUM HISTORY

Joy Spurr
(1919–2009)

If you're familiar with the "Arboretum Bulletin," then you're familiar with the wonderful work of Joy Spurr. From the 1970s to early 2000s, Joy was the Arboretum's official photographer, and her huge slide library is a treasure trove of Arboretum plant collection images, as well as an important archival record of the activities, developments and events that took place in the park over those decades.

If you've used the UW Botanic Gardens' digital map of the Arboretum, you may also have seen Joy's photos. Back in 2015, with the help of a grant that Joy had given to the Arboretum Foundation, staff at the Elisabeth C. Miller Library worked with the UW Digital Library to scan many of her plant slides, and a number of these are being used to illustrate plant records on the digital map.

A Minnesota native, Joy was a professional nature photographer by trade. She ran the company NatureView Photo and photographed all over the world. Her larger collection, which is stored at the UW's Special Collections Library, includes shots from locations not only in the western United States, but also South America, Africa and Asia.

Joy moved to Seattle in 1940, and then to Issaquah in the late 1980s. Besides her connection to the Arboretum Foundation, she had ties to other local nature-affiliated organizations, including the Woodland Park Zoological Society, Puget Sound Mycological Society, Evergreen Rock Club and Issaquah Rock Center. And at the Arboretum, she contributed in other ways besides photography. For instance, in 1966, she edited our plant propagation handbook,

Picea brachytyla

"Cuttings Through the Year," which still sells well at the Arboretum Shop and is currently undergoing a sixth revision and reprinting.

When Joy passed away in late 2009, her legacy at the Arboretum deepened even further through a bequest of approximately $400,000 from her estate. In 2011, the Foundation Board of Directors allocated half of that bequest to the creation of the New Zealand Forest (completed in fall 2013). At the time, Foundation board member—and close friend of Joy's—Elizabeth Moses said, "Joy would have loved it that we put the money into plants."

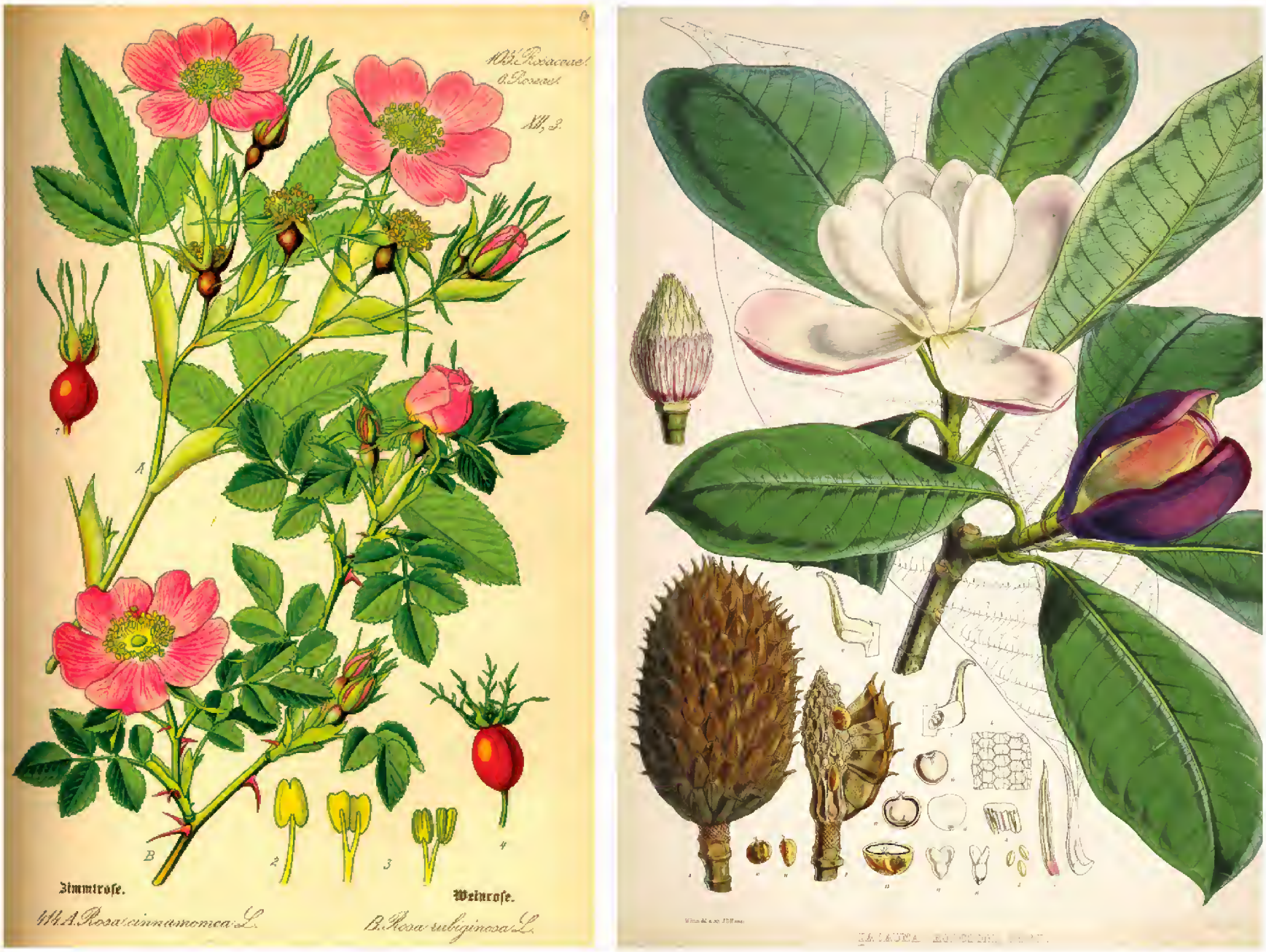
No celebration of Joy's contribution to the Arboretum would be complete without a look at some of her beautiful photos. Here are five shots that Joy took during the supposed "doldrum" months of July and August. Enjoy!

Niall Dunne is the editor of the "Arboretum Bulletin" and the communications manager for the Arboretum Foundation.

Rosa corymbulosa

Sequoiadendron giganteum

Hebe traversii



Family Trees

Knowledge of a Plant's Genealogy Can Make You a Better Gardener

By Ross Bayton

Amble around the Arboretum, and you'll notice that it's different from a typical garden. For starters, all of the woody plants (we hope) have labels: green plastic tags that tell you the plant's Latin (or scientific) name and origins. That Latin name—which often proves so difficult for gardeners to remember—is crucial, as it connects that plant to a world of useful information. Armed with a Latin name you can find photos of the plant's flowers, bark, cones or habit; guides to pruning, pests and propagation; plus conservation assessments, habitat descriptions and soil preferences. In short, books and the internet contain everything you may want to know about a plant, and the Latin name is the key.

But must it be Latin? Surely a common or English name is sufficient? Try searching for cedars, and you'll soon see the problem. There's cedar of Lebanon (*Cedrus libani*), western red cedar (*Thuja plicata*), eastern red cedar (*Juniperus virginiana*), incense cedar (*Calocedrus decurrens*),

ABOVE: 19th-century botanical plates illustrating members of the rose family (left) and magnolia family (right).

stinking cedar (*Torreya taxifolia*), running cedar (*Diphasiastrum digitatum*), and many more. All of these "cedars" are different plants with different needs and backstories: The last in the list isn't even a tree, but a creeping clubmoss! It is their different Latin names that help to distinguish these seemingly similar plants.

Another point of note, while wandering Washington Park Arboretum, is that there are many related plants growing close together. As you inspect the tags, you'll find magnolias en masse, clusters of camellias and rowans in ranks. Like many botanic gardens, the Arboretum was originally laid out along taxonomic lines, with areas devoted to specific plant families. Modern planting schemes often attempt to recreate natural habitats with plants sharing a geographical background—think the Pacific Connections Garden—but a traditional taxonomic layout does have its advantages. When you see allied plants growing side by side, you can begin to appreciate the physical characteristics that link them together and gradually develop a feel for plant families.

My recent book, "Plant Families: A Guide for Gardeners and Botanists" (University of Chicago Press, 2017) makes it easy to identify the common plant families found in gardens. Take for example two quite different families that are much in evidence in the Arboretum: the magnolia family and the rose family. Magnoliaceae, to use the technical term, includes only about 240 species of trees and shrubs, almost all in the genus *Magnolia*. (There's one other genus in the family, *Liriodendron*, tulip tree, comprising two species.) In contrast, Rosaceae encompasses 2500 species in 90-plus genera, including many important edible (apple, pear, cherry, plum, peach, strawberry, raspberry) and ornamental (roses, rowans, avens, meadowsweet, lady's mantle, cotoneaster, cinquefoil, spiraea) plants.

Both families are readily recognizable, despite the variation within each one. Rose relatives typically have leaves with pairs of prominent stipules and five-petalled flowers, with the petals and sepals fused together at their base to form a cup-like structure called a hypanthium.

Magnolias and kin also have stipules, though these readily drop off. Unlike with roses, their flowers lack hypanthia and have numerous petal-like tepals. Getting to know the physical characteristics that determine common plant families will greatly simplify plant identification: It's much easier to hunt for a name online when you already know the family. Related plants are also likely to share some care requirements. For example, the bacterial disease fire blight only infects members of Rosaceae, while Magnoliaceae dislike pruning and are slow to recover from it. There are numerous poisonous plants in the potato family (Solanaceae), while most of the heather family (Ericaceae) prefer acidic soils.

Once you've mastered the common plant families, start spotting them wherever you go: It's a good way to enliven a dreary journey, the botanical equivalent of "I spy." Not only will you be able to identify most plants that cross your garden path, but you'll also start to recognize commonalities in both their care and uses around the garden. In short, a knowledge of plant families will make you a better gardener.

Ross Bayton is an experienced gardener, plantsman, taxonomist and communicator with an infectious enthusiasm for all things green. He has a PhD in taxonomy from the University of Reading, England. A long-time volunteer at the Arboretum, and in the Hyde Herbarium at the Center for Urban Horticulture, he also works as a botanist for Heronswood. He is the co-author of three books, including "New Trees: Recent Introductions to Cultivation" (Royal Botanic Gardens Kew, 2010).

GLOSSARY OF TERMS

Sepal: leaf-like, outer parts of the flower that protect it while in bud.

Stipule: small, leaf-like appendages, typically borne in pairs at the base of leaves.

Tepal: name given to a flower's outer parts if they can't be differentiated into petals and sepals.

Magnolias of the ARBORETUM

By Ray Larson

Magnolia grandiflora 'Exonienis'. (Photo by Niall Dunne)

Adapted from an article that appeared in "Magnolia," the journal of the Magnolia Society International (www.magnoliasociety.org).

The Washington Park Arboretum features one of the larger public collections of magnolias in the United States. Magnolias have been an important part of the University of Washington Botanic Gardens' collection here since the establishment of the Arboretum in 1934. Since 2013, our magnolias have been part of the Magnolia Multisite Collection of the Plant Collections Network—which is administered by the American Public Gardens Association, in collaboration with the US Department of Agriculture's Agricultural Research Service. It is one of 17 gardens throughout North America that comprise the Multisite Collection for the continent. The Network facilitates collaboration between the member gardens, enabling them to strengthen their magnolia collections, and it provides a comprehensive collection of the entire *Magnolia* genus across member gardens in different climates.

With its temperate marine climate—characterized by mild, relatively dry summers and cool, wet winters—our region is excellent for growing many magnolia species. Currently the Arboretum has over 250 individual specimens representing 34 magnolia species, four subspecies and varieties, and 65 cultivated varieties. The collection is spread through several areas of the Arboretum but is concentrated in the Magnolia family (Magnoliaceae) section, just to south of the Woodland Garden, along Arboretum Drive. This section was laid out in the original Olmsted Brothers plan for the Arboretum in 1936 and covers about four acres.

MATURE SPECIMENS

The largest and tallest trees in the Magnoliaceae section (not including the Douglas firs and western red cedars in the surrounding native matrix) are mature tulip trees, *Liriodendron tulipifera*, accessioned in 1937. (Along with *Magnolia*, *Liriodendron* is one of two

genera in the Magnoliaceae.) This deciduous eastern U.S. native has become a popular street tree in Seattle, due to its fast growth, distinctively shaped leaves, and lovely, tulip-like, pale-yellow flowers and golden fall foliage color. The towering cluster of tulip trees in the Arboretum's collection puts on a wonderful display each fall.

Though *Magnolia* species were planted in the Arboretum from the beginning, accelerated development of the collection took place in the late 1940s through the 1950s, under the supervision of Brian Mulligan. Mulligan, director of the Arboretum from 1946 to 1972, was trained at the Royal Horticultural Society's garden at Wisley and maintained many contacts in Great Britain and elsewhere, who became sources for new plants. The Arboretum features many fine mature specimens from that period, particularly of Asian species. We have impressive specimens of Campbell's magnolia (*Magnolia campbellii*), Yulan magnolia (*M. denudata*), Sprenger's magnolia (*M. sprengeri*), Dawson's magnolia (*M. dawsoniana*), *M. sargentii* and *M.* × *veitchii*.

To highlight just a couple of these, we have 10 specimens of the stunning Campbell's magnolia, native to the Himalayas. Obtained from Hillier and Sons Nursery (England), Royal Botanic Gardens Kew and Bodnant Garden (Wales), among others, most of the specimens are planted in the midst of our Camellia Collection at the south end of the Arboretum. They add vertical interest to the camellias, as well as pink and white, cup-and-saucer-shaped spring flowers. A mature *Magnolia* × *veitchii* (one of five specimens in the Arboretum) also grows among the camellias in this section of the park. A hybrid of *M. campbellii* and *M. denudata* created by Peter Veitch at the Royal Nurseries in England, it boasts beautiful pink-white, chalice-shaped spring flowers.

We also have lovely mature specimens of summer-blooming southern magnolia (*M. grandiflora*), both straight species and cultivated selections. (The oldest specimen, growing in the center of the main Magnoliaceae collection, dates back to 1938.) In the earlier decades of the Arboretum, some of the cultivars occasionally experienced winter damage, but this has been uncommon over the last 20 years.

The Arboretum was the first public garden in the region to acquire and cultivate many particular species, and because of this, nearly 20 magnolias in the collection are recognized as state champions of their kind. A major renovation of the collection was undertaken in the 1990s. Shading of the collections has always been a concern, and at this time, several western red cedars were removed or thinned to create better growing conditions. Redundant or poor examples of some magnolias were removed, while some were transplanted to better sites. Numerous new species and many new cultivars were added.

A MEMORABLE SELECTION

The Arboretum's most well-known contribution to magnolia cultivation was the selection and introduction of *Magnolia* × *kewensis* 'Wada's Memory'. In 1940, we purchased a batch of *Magnolia kobus* seedlings as part of a larger order of maples, camellias and magnolias from Koichiro Wada's nursery in Numazu, Japan. Many of the seedlings were planted throughout the Arboretum, but one in particular

TOP LEFT: *Liriodendron tulipifera* 'Arnold'. (Photo by Niall Dunne)
BOTTOM LEFT: *Magnolia* × *veitchii* in the Camellia Collection. (Photo by Niall Dunne)

Magnolia 'Wada's Memory'. (Photo by Ray Larson)

Close up of a 'Wada's Memory' flower. (Photo by Niall Dunne)

Magnolia sieboldii spp. *sinensis*. (Photo by Niall Dunne)

had much larger flowers than the others and bore them in great profusion. The plant had the added benefits of maintaining a compact, conical habit and flowering at a young age. In 1959, Brian Mulligan published a description of the tree as a variety of *Magnolia kobus* and named it in honor of Mr. Wada. (It was later determined to likely be of hybrid origin, with *Magnolia salicifolia* also contributing to its parentage.) The original tree survives to this day and is a spectacular sight along Arboretum Drive each year.

During most years, 'Wada's Memory' flowers from late March to early April in the Seattle area. Fast growing in youth, it is strongly pyramidal and produces abundant white flowers of a light fragrance. New foliage growth is bronzy-purple, while fall color is a pleasing yellow. 'Wada's Memory' has proven to be well suited to both colder and warmer climates and grows well through most parts of the United States. It received an Award of Garden Merit from the Royal Horticultural Society in 1993, and is still widely planted and admired.

POPULARIZED BY THE ARBORETUM

In 1949, we received *Magnolia cylindrica* as a scion (a cutting grafted onto rootstock) in 1949 from a plant grown from seed by Mrs. J. Norman Henry of Gladwyne, Pennsylvania. She had gotten the seed from the Lushan Botanical Garden in Jiangxi Province, China, in 1936. Our tree was planted out in the Arboretum in 1952 and bloomed for the first time in 1959. At the time, the species was relatively unknown in cultivation, and the Arboretum was largely responsible for its distribution to West Coast gardens. It's an excellent small tree for sunny locations, offering fragrant, white and pink, lily-like blooms in spring; large, bright-red, cylindrical fruits in summer; yellow fall color; and attractive, smooth, gray bark. Sadly, the species is threatened by habitat loss in its home range of southeast China.

An unusual species that we've grown for a long time is *Magnolia tamaulipana*—an evergreen, summer-blooming tree native to cloud forests in Mexico. A close relative of *M. grandiflora* it is listed as endangered in its home range, due to habitat loss and harvesting for firewood and medicinal use. We first received the plant as seed from Missouri Botanic Garden in 1948. A seedling was planted out in 1953, and in 1971 was among the first specimens in cultivation to flower. The tree has flowered somewhat sporadically since then, with some years being better than others. The flowers are creamy white and up to six inches wide.

The top of the tree was damaged in the cold winter of 1990, but the plant recovered well and has grown into a substantial specimen, about 30 feet tall by 20 feet wide. Planted on a slope above Azalea Way, just north of the Woodland Garden lower pond, it receives lots of sun, from late morning onward. It has also likely benefitted from

being in a somewhat protected spot, sheltered from winds and cold pockets. The milder winters of recent decades have probably helped too. We have distributed the species to other gardens over the years, and we planted two other specimens ourselves, in 1968 and 2011. Both are doing well, though they are sited in shadier locations.

Another somewhat uncommon species that we grow is *M. sieboldii* ssp. *sinensis*, which has a restricted distribution in the northwest part of the Sichuan province of China. Our original plant dates back to 1947, when we acquired it from Hillier and Sons. It was planted at the north end of the Magnoliaceae collection in 1952 and first bloomed in 1958. It typically blooms the first week of May for us and has a sweet scent similar to that of *M. wilsonii*. But it is much smaller plant and closer to *M. sieboldii* ssp. *sieboldii* in most respects.

We recently received a second specimen from plant explorer Dan Hinkley—a small plant grown from seed that he collected in the wild in 2013. It is now large enough to plant out in the Arboretum this fall. Dr. Koen Camelbeke, of Arboretum Wespelaar, was particularly interested in seeing our original specimen when he visited the Arboretum in May 2015.

NEW AND UNUSUAL

In the Chinese Entry Garden at Pacific Connections, we have a wonderful example of yellow lily tree, *Magnolia ernestii*, which has put on good growth and bloomed profusely since it was transplanted at 20 feet tall from a private garden in 2008. This has proven to be one of the hardier evergreen Asian species for us in the Pacific Northwest. Bloom time is usually mid spring, and the fragrant flowers vary in color between soft yellow and white.

In recent years, we have continued to add magnolias to the collection, with an emphasis on plants of known wild origin. Thanks to our long relationship with Dan Hinkley, we have been able to try new species from previously less explored areas, such as northern Vietnam and parts of China. We will be trialing several new specimens recently received from Dan's collections in northern Vietnam, including several with affinity to the red lotus tree, *M. insignis*. Our participation in the Magnolia Multisite Collection has resulted in new germplasm being introduced and the opportunity to trial other new species and subspecies. It is exciting to see these bloom for the first time, and to test their hardiness in our area.

Ray Larson is curator of Living Collections at the University of Washington Botanic Gardens and curator of the Otis Douglas Hyde Herbarium, the Arboretum's herbarium housed in the Center for Urban Horticulture.

SUMMER-BLOOMING MAGNOLIAS IN THE ARBORETUM

Following are magnolias that produce summer blooms in our region. Some spring-flowering species—such as *M. acuminata*, *M. liliiflora*, *M. fraseri* and *M. lotungensis*—may also bloom into early summer or sporadically produce flowers in summertime.

***Magnolia grandiflora*, southern magnolia**

This iconic tree of the southeastern U.S. bears elliptic, glossy, evergreen leaves and large, fragrant, cup-shaped, creamy-white flowers. You'll find a number of mature specimens in the main Magnoliaceae section.

***Magnolia* x 'Freeman', Freeman magnolia**

A hybrid of *M. grandiflora* and *M. virginiana*, this tree looks a lot like grandiflora, but has smaller leaves and flowers. Two specimens grow at the north end of the Sorbus collection, across Arboretum Drive from the main Magnoliaceae section.

Magnolia tamaulipana

An unusual evergreen species from Mexico, closely related to *M. grandiflora*. (See main article for location.)

***Magnolia virginiana*, sweet bay magnolia**

An eastern U.S. native, this magnolia is semi-evergreen here in Seattle and produces two-inch-wide, strongly scented, cup-shaped white flowers. You'll find a cluster growing along Azalea Way, across from the Rhododendron Hybrid Garden.

Q&A from the Miller Library's Plant Answer Line

Colocasia: Historical Context of an Introduced Species

By Rebecca Alexander

This regular column features Q&A selected and adapted from the Elisabeth C. Miller Library's Plant Answer Line program. If you'd like to ask a plant or gardening question of your own, please call (206) 897-5268 (UW Plant), send it via the library website (www.millerlibrary.org), or email directly to hortlib@uw.edu.

QUESTION

I recently moved from Seattle to Pensacola, Florida. There are many unfamiliar plants in the garden of my new home, and I'm curious about the enormous tropical-looking plants my neighbors call "elephant ears." They stand about six feet tall and have huge, elongated, heart-shaped leaves. I'd like to know more about them.

ANSWER

Those are likely to be *Colocasia esculenta*, a perennial plant in the Arum family (Araceae) that goes by other common names besides elephant ears, including dasheen, taro, imo and cocoyam. It is native to tropical Asia and the southwestern Pacific. The species name translates to "fit to be eaten," and the corms (swollen underground stems) and leaves of the plant are cooked and consumed in many parts of the world. Because of its widespread use as a food crop, *Colocasia esculenta* is sometimes referred to as "the potato of the tropics."

Thorough cooking is important. The United States Department of Agriculture guide to this plant notes that the corms and leaves will cause stomach distress if not cooked properly, and that its sap is a skin irritant. Nonetheless, the USDA itself promoted *Colocasia* as a crop in the early 1900s in Florida and other parts of the Southeast as an alternative to potatoes.

A Florida Invasive

Fast forward 100 years, and the plant is not so welcome anymore: *Colocasia esculenta* is now listed as a Category 1 invasive species by the Florida Exotic Pest Plant Council. It has escaped cultivation and is threatening native plant communities up and down the state.

A similar-looking plant in the same family, *Xanthosoma sagittifolium*, also goes by the common name elephant ears. It, too, has edible uses, and—as so happens—is a Category 2 invasive species in Florida (not yet altering native plant communities to the extent of Category 1 plants). The large leaves of both types of elephant ears create a lot of shade that can prevent native species from thriving.

So, should you be tackling this plant in your garden in order to eradicate it? Ecologically speaking, the answer may well be "yes." According to the Florida Fish and Wildlife Conservation Commission, *Colocasia esculenta* now grows in dense thickets along many Florida waterways—such as the St. Johns River and its tributaries—displacing native shoreline vegetation that is a source of food for wildlife. However, eradicating this plant raises a number of provocative cultural heritage questions. And that's because the plant's arrival in this country is deeply linked to the history of the slave trade.

Link to Slave Trade and African Heritage

Pensacola was one of the first places in the continental United States where Europeans settled (as early as 1559). The Spanish settlers also brought slaves from Africa. Slave traders needed to load subsistence staples, along with the slaves

The edible corms of Colocasia esculenta. (Photo by David Monniaux/ Wikimedia Commons).

INSET: Elephant ear foliage. (Photo by Dalgial/Wikimedia Commons)

they forcibly took from Africa, and it was expedient to bring local food items (such as rice, millet, sorghum, Guinea yam, yam beans, cow and pigeon peas and taro) that would be familiar to the involuntary passengers.

Colocasia and some of the other food plants were not native to Africa, but introduced to the Niger Delta, probably by seafarers from Southeast Asia (Indonesia) as early as 2000 years ago. The slave traders were not thinking of those plants as potential crops for cultivation in the New World; they were simply trying to deliver their human cargo alive to the destination.

Many of the slaves would have had agricultural skills, but there was no opportunity to carry anything but their knowledge with them. There is a persistent legend of mothers hiding grains of rice in their children's curls, for future planting. Whether or not it is true, slaves who survived the passage certainly would have tried to retain whatever they could of their culture—from agricultural and food practices to the medicinal and ceremonial uses of plants—and pass this along to their descendants.

Preserving a Legacy While Protecting Nature

The story of plant invasions is often one of unintended consequences. We do not know in advance which introduced plants will thrive to the point of displacing native species. The discovery of invasiveness unfolds over time. The issue of native, introduced, and invasive plant species is grist for many a heated argument, but cooler heads remind us that invasiveness is particular to climate and conditions. (For instance, *Colocasia* will not spread aggressively in the Pacific Northwest, given our cool wet winters.)

Scientists and horticulture professionals have mainly considered how invasive plant species affect natural environments. We often overlook the cultural and historical context of introduced species. In calling for the control of *Colocasia esculenta* in a region where African slaves lived—deracinated from their homelands and all that was familiar—it seems important to consider maintaining at least some carefully contained examples of the plant to preserve that legacy.

In the case of your own garden, you will want to follow local regulations about controlling invasive plants, and be particularly vigilant if your elephant ears are growing close to a sensitive wetland. (Currently the species is not on the federal or Florida State noxious weed list, but it could possibly be regulated by local ordinance.) That said, it is always worth taking the time to learn more about plants and their complex intersections with human history.

Growing *Colocasia* in the Pacific Northwest

If you wish to cultivate subtropical plants in your garden, James Reynolds's "Subtropical Gardening in a Temperate Climate" is an excellent resource. In his discussion of *Colocasia*, he cites Victorian garden designer William Robinson's book, "The Subtropical Garden," in which he says that *Colocasia*—then called *Caladium*—only thrives in the warmer parts of Britain, and requires "a thoroughly-drained, light, rich, warm soil," and adequate water and fertilizer in summer. Reynolds says it is easy to cultivate in full sun and fertile soil, but it will need ample water in our gardens. He recommends planting them two feet apart.

Before the first frost, cut the stems off a few inches above the ground, dig up the plants and let them dry out for a day or two, then store in coir (coconut fiber) to overwinter in a cool, dry place. He plants them out in the garden again in May.

The author says *Colocasia* are as easy to grow as cannas, and are "excellent companion plants for palms and other exotic plants [...] Given the size of their leaves and that one plant will produce five or six leaves, an impressive group can be created by only four or five plants. Flowers are rarely seen but apparently resemble giant callas."

An informal poll of local elephant ears enthusiasts suggests that the plants do not survive winter outdoors here, as the tubers tend to rot—and even when they don't, they take a long time to revive and cannot attain good growth. They require a fair amount of work. George Lasch, of Edmonds Community College's horticulture program, says they do best in containers in full sun on a concrete surface, with lots of food and water. Think of them as annuals, or move them to a hot house before winter comes.

Photo by Jeevan Jones/Wikimedia Commons.

Rebecca Alexander is the manager of Reference and Technical Services at the Miller Library, located in the UW Botanic Gardens' Center for Urban Horticulture (3501 NE 41st Street, Seattle). She is also a contributing editor to the "Bulletin."

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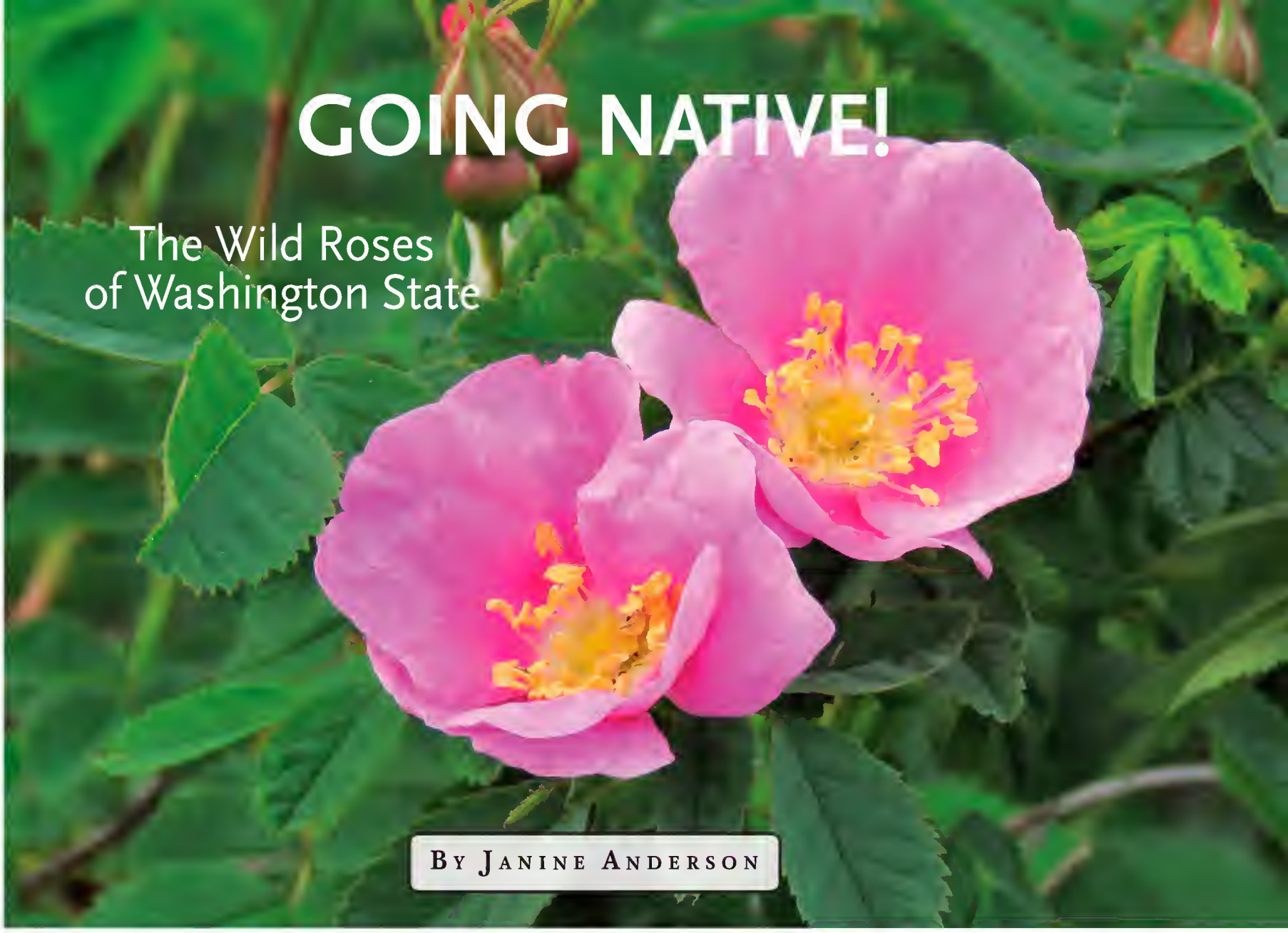


GOING NATIVE!

The Wild Roses of Washington State

By Janine Anderson

Worldwide, there are more than 100 species of wild roses, in addition to the more than 14,000 cultivated varieties. Four of the 22 species native to the United States are also native to Washington state. Three of these—*Rosa gymnocarpa*, *R. nutkana* and *R. pisocarpa*—are found in Western Washington, while one (*R. woodsii*) is found predominantly east of the Cascade Crest.

Washington's wild roses share a number of traits. For example, they all bear simple flowers with five, pale- to dark-pink petals. However, they also have their own unique characteristics. Any of these beautiful shrubs would make your garden more wildlife friendly and provide ornamental interest throughout much of the year.

Our native roses are just magical when encountered beside a garden path. Because they all sucker freely, I generally recommend them only for contained garden spaces, or in large gardens with wilder, more natural areas.

Their value to wildlife cannot be understated. Because of their suckering habits, they form dense thickets that offer protection from predators to small mammals and birds. Rose hips serve as a food source for birds such as thrushes, juncos, grosbeaks and quail, as well as mammals like chipmunks, rabbits, coyotes and deer. The seeds in rose hips can be a source of grit for birds. Mourning cloak butterfly larvae eat the rose foliage, and leaf-cutter bees cut out circles in the leaves to use for nest material. The pollen in the flowers feeds bees in the summertime.

Following are profiles of our native roses. Once you get to know them a little better, you won't have trouble distinguishing them out on a trail, and you may be tempted to give one or more of them a try in your own yard.

Rosa nutkana, Nootka rose

Probably the most well-known and regionally widespread of our native species is the Nootka rose. It grows wild in open areas such coastal shorelines, meadows and woodland edges from low to middle elevations throughout the entire Northwest.

Nootka rose can reach 10 feet tall and often forms dense, almost impenetrable thickets. Its stems are armed with a pair of nasty, large prickles at the base of each leaf, making them tough to tangle with. Each compound leaf of the

ABOVE: Nootka rose in flower. (Photo by Janine Anderson)

Native Douglas squirrel feeds on Nootka rose hips in November. (Photo by Janine Anderson)

Nootka rose is made up of five to seven elliptical leaflets—and this number may help with identification, as all the other natives can have up to nine leaflets. (If it has nine leaflets, you know it's not a Nootka!)

Probably its most distinguishing feature, however, is its large flowers, which can measure two inches or more across. They appear in spring to early summer and have a pleasing, cinnamon-like scent. The pink flowers are generally borne singly at the branch tips. In summer, they develop into round, purplish-red hips.

In Western Washington, Nootka rose is often found in the company of snowberry (*Symphoricarpos albus*). The two provide a refreshing display on gray winter days, with the rose's large, bright hips dotting bare, reddish stems interspersed with small, white snowberries.

The distinctive hips of the baldhip rose. (Photo by nwplants.com/Wikimedia Commons)

Rosa gymnocarpa, baldhip rose

Baldhip rose is found throughout most of Washington state, as well as much of the Northwest region. The species is sometimes called wood rose (not to be confused with Wood's rose below) because it makes its home in low- to middle-elevation forests.

Baldhip rose has erect or spreading stems that reach one to seven feet tall. The stems have many soft, bristly, straight prickles. The leaves of baldhip roses have five to nine oval- to egg-shaped leaflets with toothed margins that measure one-half to 1½ inches long.

Flowering occurs in late spring to midsummer, depending on the elevation. The flowers are small (up to three-fourths inches wide), pale pink to rose-colored, fragrant, and usually borne singly at the ends of branches.

These develop into small, orange to bright-red, oval- to pear-shaped hips. The names "baldhip" and *gymnocarpa* (meaning "naked fruit") refer to the fact that the leaf-like flower sepals (see page 14 for more about sepals) drop off the fruit early, leaving the end of the hip that's not attached to the stem "bald." All the other natives retain their sepals, so this is an easy way to distinguish this species.

Clustered wild rose in flower. (Photo by nwplants.com/Wikimedia Commons)

Rosa pisocarpa, clustered wild rose

Clustered wild rose is native from southern British Columbia to Northern California, mostly on the west side of the Cascades in Washington state. It is more widespread in Oregon than in Washington and has also been found in one county in northern Idaho.

Like the Nootka rose, clustered wild rose is often found along the coast (tending to favor wet areas, such as streamsides), but there are some simple ways to tell them apart. Clustered wild rose doesn't grow as tall and maxes out at about six feet. It can have between five to nine finely toothed leaflets on each leaf, but these are more sharply pointed compared to those on Nootka. Like with Nootka rose, paired prickles arise at

the base of each leaf, but these are usually smaller or may be missing altogether.

The most obvious difference is seen when both are in flower. Clustered wild rose blooms from May through July (a little later than Nootka) and bear pink flowers that get up to 1½ inches wide. Unlike the solitary flowers of Nootka, the flowers of *R. pisocarpa* are usually borne in clusters of two to ten—hence the common name.

The hips ripen in early fall and persist through winter. They are pea-sized, round to pear-shaped, and reddish purple—and, like the flowers, they are borne in clusters. The fruit is much smaller than on Nootka rose, and only a thin layer of flesh surrounds the hairy achenes that contain the seeds.

Blossom and buds of Wood's rose.
(Photo by nwplants.com/Wikimedia Commons)

Rosa woodsii, Wood's rose

In Washington state, you have to travel east of the Cascade Crest to enjoy *Rosa woodsii* in its natural habitat. (That said, its range is huge, stretching through much of western North America.) Wood's rose is hardier than our other native roses, growing in valleys and hillsides at low and subalpine elevations. It needs little sun, is drought tolerant, and can survive on steep, rocky slopes with little topsoil.

At maturity, Wood's rose can reach six feet tall, but usually it reaches only three feet with a spread of three to six feet. It is often found in dense thickets.

The leaves have five to nine (but usually five to seven) elliptic leaflets with serrated edges. The leaflets can grow to 2½ inches long. Paired prickles at the base of each leaf are straight or slightly curved and tiny. They are generally less menacing than those of the other roses, and less likely to tear skin and clothing.

Wood's rose blooms from late spring to early summer. The saucer-shaped flowers are relatively small, about half the size of those of Nootka rose, and range in color from light to dark pink. Flowers literally cover the shrub when it's in bloom, although each flower generally lasts only one day. But others follow quickly, and the entire show lasts for many weeks. As an added bonus, the flowers give off a strong, sweet fragrance.

Small (one-half inch or less), round, deep-red hips form after flowering.

What Makes a Rose a Rose?

Although roses have characteristics particular to their species, they also have traits in common. Flower parts, such as petals and sepals, are usually in multiples of five. Leaf arrangement is alternate, and the pinnately compound leaves have three to 13 leaflets, which are often serrated. Rose stems are usually armed with sharp prickles—thorn-like structures that emerge from the outer layer of the stem. Roses are pollinated by insects and develop an aggregate fruit called a hip. The seeds are enclosed in bony structures with hair-like appendages called achenes.

Ethnobotany of Our Native Roses

Every part of most native roses had value for one or more of the Northwest's aboriginal groups. Rose hips are good sources of vitamin C, but often only the outer rind was eaten, as the hairy achenes could irritate the mouth and digestive tract and cause "itchy bottom."

Tender young leaves were steeped for tea. A poultice of mashed leaves was used to treat sore eyes and any type of abscess. Chewed leaves were applied to bee stings, and ripe rose hips were steeped, mashed and fed to babies with diarrhea.

Tender young shoots were sometimes peeled and eaten raw. The bark was used to make a tea to ease labor pains. And a decoction made from roots or bark was used as an eyewash or to treat sore throats.

Janine Anderson, CPH, is an award-winning Pacific Northwest-based landscape designer (www.northbeachlandscapes.com), garden writer, speaker and member of the "Bulletin" Editorial Board.

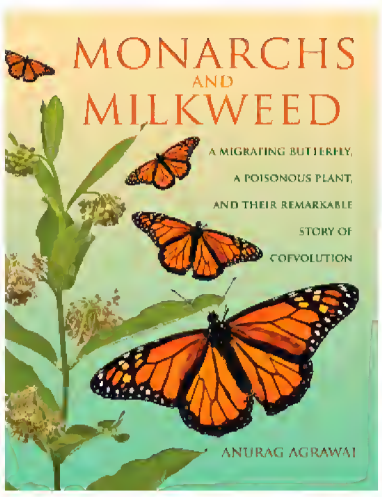
In a Garden Library

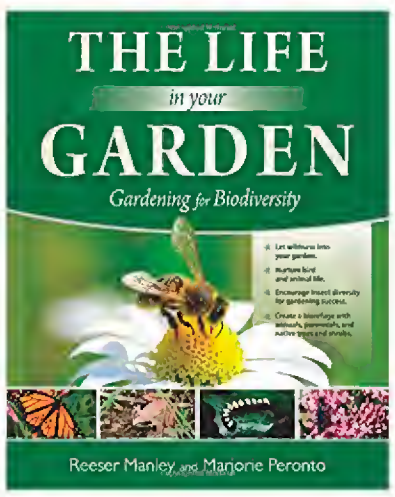
Award-Winning New Books for Pacific Northwest Gardeners

By Brian R. Thompson

From time to time in this column, I highlight recent books that were highly regarded by either the American Horticultural Society (AHS) or The Council on Botanical and Horticultural Libraries (CBHL). Many of these are award winners.

While these books are generally not by Pacific Northwest authors, many have a connection to our region, and I recommend them as good additions for home garden libraries or for borrowing from the Miller Library. One local AHS winner this year is "Floret Farm's Cut Flower Garden," by Erin Benzakein, reviewed in the Fall 2017 issue of the "Bulletin."





Biodiversity in the Garden

"Monarchs and Milkweed" is like a mystery novel of the highest order. Who will survive? The butterfly or the weed? Even better, this is not fiction!

Anurag Agrawal's writing is very compelling. I read this book as quickly as I would any whodunit. The characters include the baby caterpillar monarchs, trying to survive their first encounter with their only source of food, the leaves of milkweed. Many do not.

The milkweed plant has many ways to protect itself including with its own gooey latex-like sap, as well as by coaxing monarch predators to do the job. There is good reason for this: The plant gains nothing from its interaction with monarchs, as the adult butterflies are not helpful pollinators.

In contrast, the larval and adult butterflies gain a toxicity that protects them from significant predation by birds. But this toxicity is not an effective defense against other insects or various parasites. The plant seems to know this. The battle of coevolution moves on.

Agrawal is a scientist who interweaves his personal life and research. He discovered the caterpillar of an unknown species, brought it into his living room, and watched it pupate and eventually emerge from its chrysalis as a butterfly. The experience turned out to be a serendipitous lesson in mimicry, because the butterfly was a viceroy, which has similar coloration to a monarch and thereby gains some of its protection, even though it lacks toxicity for birds.

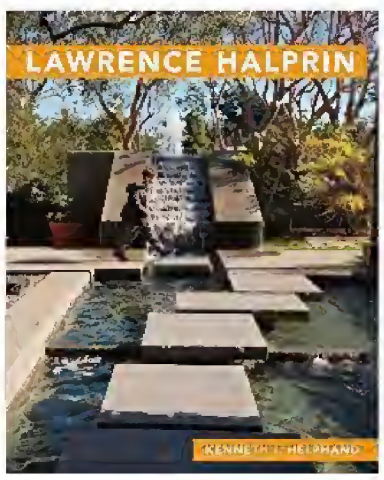
This year's winner of the CBHL Award of Excellence in Gardening and Gardens, "Monarchs and Milkweed" has wide appeal, even for parts of the country like ours outside of the natural range of the monarch.

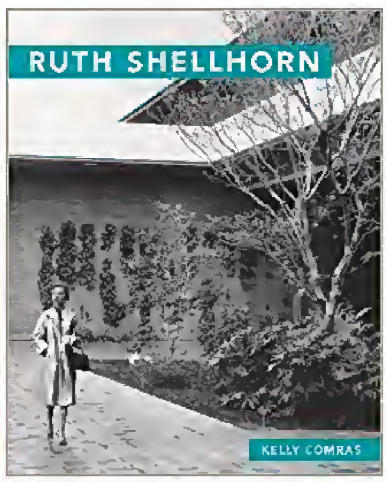
"The Life in Your Garden" is a good companion book as it also highlights milkweeds, promoting the plants as excellent for overall garden health and biodiversity. Authors Reeser Manley and Marjorie Peronto garden in Maine,

but Manley received his PhD in horticultural science from Washington State University.

The authors strongly detest the word "pest" and instead see insects and other small garden creatures as pollinators, herbivores and/or predators. Observing this life has been the source of many realizations for the authors about the positive impact even a small garden can have on its environment.

The book pays special attention to "functional" plants that provide more than just ornamentation, with a special emphasis on understory plants, which they say "are every bit as important as canopy trees in fostering garden biodiversity." The lengthy encyclopedia section features East Coast natives, but in most cases, western counterparts are found in the appendices. The authors also seek functionality in their annuals and perennials, "creating plantings that sustain garden life from the first-emerging bumble bees in late April until the last hoverflies of late September."





West Coast Landscape Architects

The "Masters of Modern Landscape Design" is a series of biographies featuring landscape architects prominent in mid- to late-20th-century North America. Two books nominated for AHS awards feature West Coast landscape architects, who both lived productively into their 90s.

Lawrence Halprin (1916–2009) is best known in Seattle for Freeway Park, but he was also responsible for the master landscaping plan for the Seattle World's Fair, a project he worked on from 1958–1962. Author Kenneth Helphand is a professor emeritus in landscape architecture at the University of Oregon and also wrote "Defiant Gardens: Making Gardens in Wartime" (2007), an award winner that I reviewed in the Spring 2012 issue of the "Bulletin."

Freeway Park was the first capping of an interstate freeway—a model replicated widely since that time. This biography recounts the initial praise for the project (opened in 1976), the expansion by Halprin associate Angela Danadjieva, the subsequent decline of the park into disuse, and revitalizing revisions to the plantings of the last decade. Before his death, Halprin contributed to this last effort, which leaves the structure of the park in place.

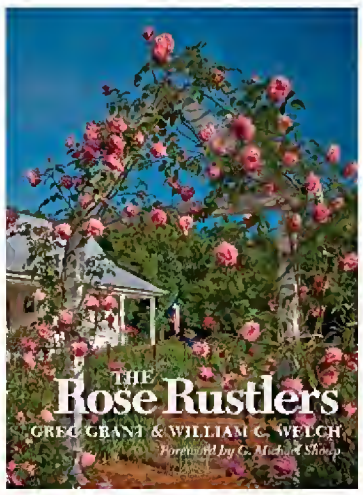
Massive waterfalls are a Halprin signature. I've long admired those at Freeway Park but was surprised last summer to discover Forecourt (now Ira Keller) and Lovejoy Fountains, in Portland. He designed these in the 1960s and linked them via an eight-block pedestrian mall. "Like all water features they invite attention—and for Halprin, participation."

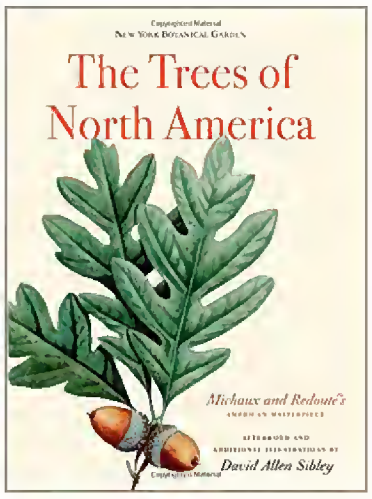
He demonstrated this at the dedication of the Forecourt Fountain in 1970. Vietnam War protests at nearby Portland State University created tension between the students and police gathered for the event. Halprin's words, and even more so his action of walking into the cascading water, helped to calm the crowd and spark a celebration of community.

The second biography in this series is about Ruth Shellhorn (1909–2006) and is written by Kelly Comras, a landscape architect based in Los Angeles. Much of Shellhorn's work was also in greater Los Angeles, but she attended what is now Oregon State University for her undergraduate degree.

Comras observes that if Shellhorn had made a greater effort of self-promotion, she would be more famous today. She quotes David Streatfield, a landscape architecture historian at the University of Washington, who noted the "terrible imbalance in terms of the public's perception between Ruth Shellhorn... and many of her contemporaries, such as Garrett Eckbo, Lawrence Halprin, and Thomas Church, who wrote books about their own work, hired professional photographers, and published extensively."

One of the most fascinating chapters is about Shellhorn's work on Disneyland. She was hired just four months before the opening in 1955, after Walt Disney belatedly recognized the need to "unify the distinctive elements" of the variously themed areas. She proved very skillful not only unifying buildings that were already in place but also helping create a visitor experience that increases the sense of discovery while mitigating the challenges of large crowds. Comras describes the landscape design by Shellhorn to be largely intact today despite ongoing changes to the park.





Antique Roses & Trees

"The Rose Rustlers" is a fun book: a bit of a garden journal, a bit diary mixed with a family photo album. Nominated for an AHS award, the authors Greg Grant and William Welch take turns sharing their stories, their favorite plants (mostly roses), and their favorite people.

Their heroes are the Texas Rose Rustlers, a dedicated group that promotes old rose varieties, many of which survive with no care in cemeteries and abandoned home sites throughout the state. While Texas has a very different climate than ours, every gardener will appreciate the tenacity of plants that are good-doers and the humans that cherish them.

One quirk of this book is the nomenclature. Rose variety names in single quotation marks are cultivars, the same as with most plants. Other varieties have double quotation marks, meaning these are study names. These substitute for real names that have been lost in time. If there are no quotation marks, this means the rose is legendary and needs no further clarification, including "popular roses like the butterfly rose, the sweetheart rose, and the green rose."

There is a lot of good horticultural advice and garden design in this book, but best are the stories. The "Air Conditioner Rose," was so named because Grant's first planting of it covered unsightly equipment. It also survived being under salt water for two weeks after Hurricane Katrina. A suckering rose in Scottsville, Texas has possibly survived since 1834. The magenta flowers are sometimes flushed with blue edges.

These roses are resilient. "Roses didn't start out as wimpy flowers. Humans did that to them. In addition to being beautiful in a simplistic way, roses were initially wiry and mean as snakes. This made them perfect Texans, of course. If an antique rose is still around, it's because it's tough and because it's pretty."

"The Trees of North America" is an excellent new book and winner of one of the three book awards given by the AHS in 2018. Who is the author? It's complicated.

The short answer is François-André Michaux (1770–1855) and Thomas Nuttall (1786–1859), and their skilled engravers, the most famous being Pierre-Joseph Redouté (1759–1840). Their collective publications span the first half of the 19th century, and were produced in both France and the United States. The full bibliographic story is in the preface of this new book.

The New York Botanical Garden (NYBG), in its LuEsther T. Mertz Library, has perhaps the most complete collection of the 16 or so different editions of "Trees" by Michaux and Nuttall. The Mertz Library staff has produced this new book, using faithful reproductions of the plates. The horticulture staff at NYBG has added notes with updates of the nomenclature, ranges and horticultural uses of the trees.

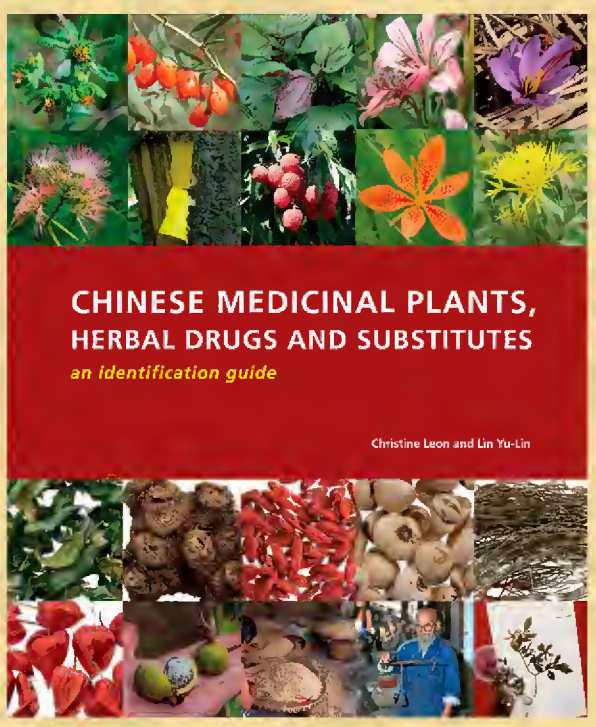
Enough words. This is mostly a picture book, but what a glorious one it is. We are fortunate to have an 1857–1865 original in the Miller Library rare book collection. While a reprint can never quite match a hand-colored original, this book comes very close.

These botanically accurate images made the original the standard reference book for North

American trees until the early 20th century. A concluding essay by David Allen Sibley explains the process of making the reprinted images—a process as complex as the authorship itself. Sibley declares, "The end results are beautiful, and the prints are true works of art on their own, but they are different from the originals."

Brian R. Thompson is the manager and curator of the Elisabeth C. Miller Library of the University of Washington Botanic Gardens. He is also a member of the "Bulletin" Editorial Board.

All About Apples and Chinese Medicine



Two winners of CBHL awards this year are major reference works that will likely be standards for many years to come. Both are available for consulting in the Miller Library. "The Illustrated History of Apples in the United States and Canada" is a seven-volume set with descriptions of all apples found in North American publications through 2000. The information will have immense importance to any pomology researcher, but the more casual reader can find pleasure in the books' beautiful images: 1400 watercolors created by artists employed by the United States Department of Agriculture, from 1886–1942.

"Chinese Medicinal Plants, Herbal Drugs and Substitutes" addresses the growing interest in the plants used in traditional Chinese medicine. This is primarily an identification book for both the living plants used in medicine, as well as the harvested and prepared parts. The result of a 15-year collaboration between the Royal Botanic Gardens, Kew and the Chinese Academy of Medical Sciences, this is a rigorous work of scholarship with excellent organization, cross-referencing and presentation.

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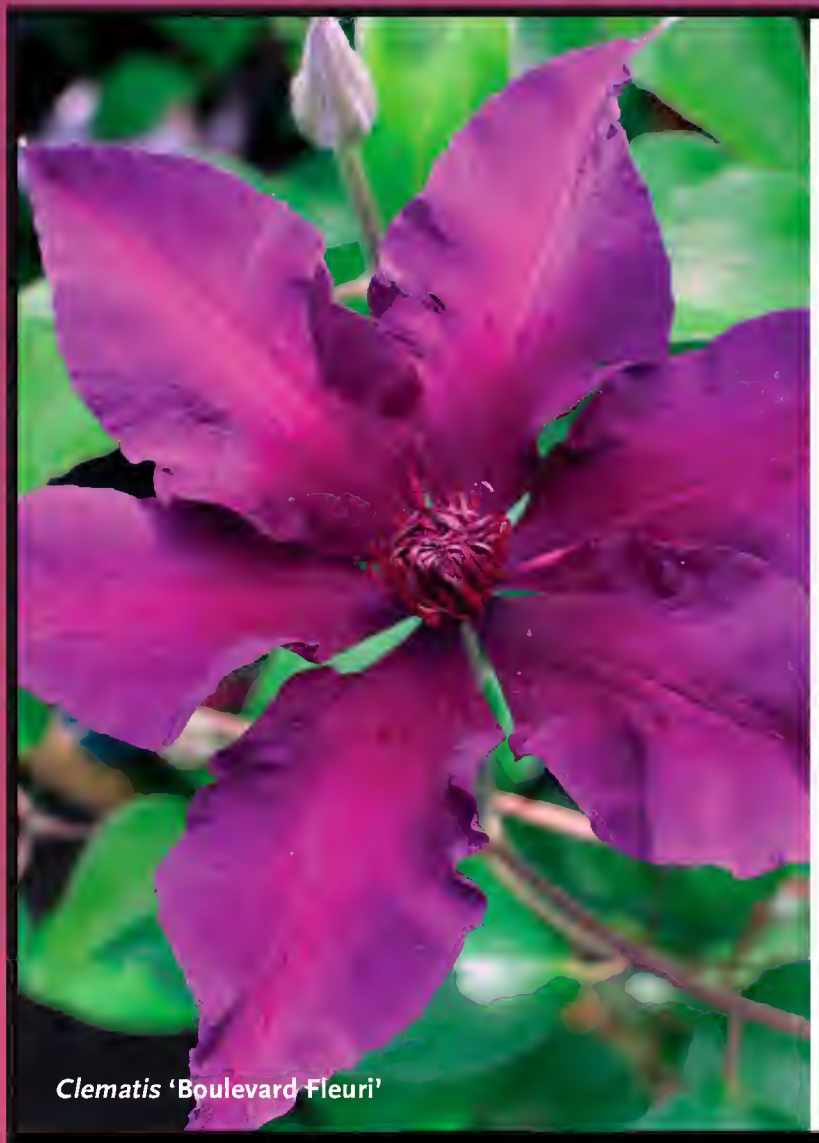

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